Public Meeting on Lead Soil Sampling in Belding

Department of Natural Resources and Environment
Department of Community Health
Ionia County Health Department
Mueller Industries, Inc.

January 12, 2011

Belding Public Meeting…

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Presentation Topics

- Recap of the 9/23/2010 Meeting and other Background Information
- Air Sampling Update
- Air Pollution Controls and Compliance Plan
- Soil Screening and Refined Sampling and Comparison with Health Criteria
- Discussion of What the Health Criteria Mean
- Update on Blood Testing in Belding
- Mueller Industries' Perspective and Plans

Why did the DNRE Begin Monitoring the Air in Belding ?

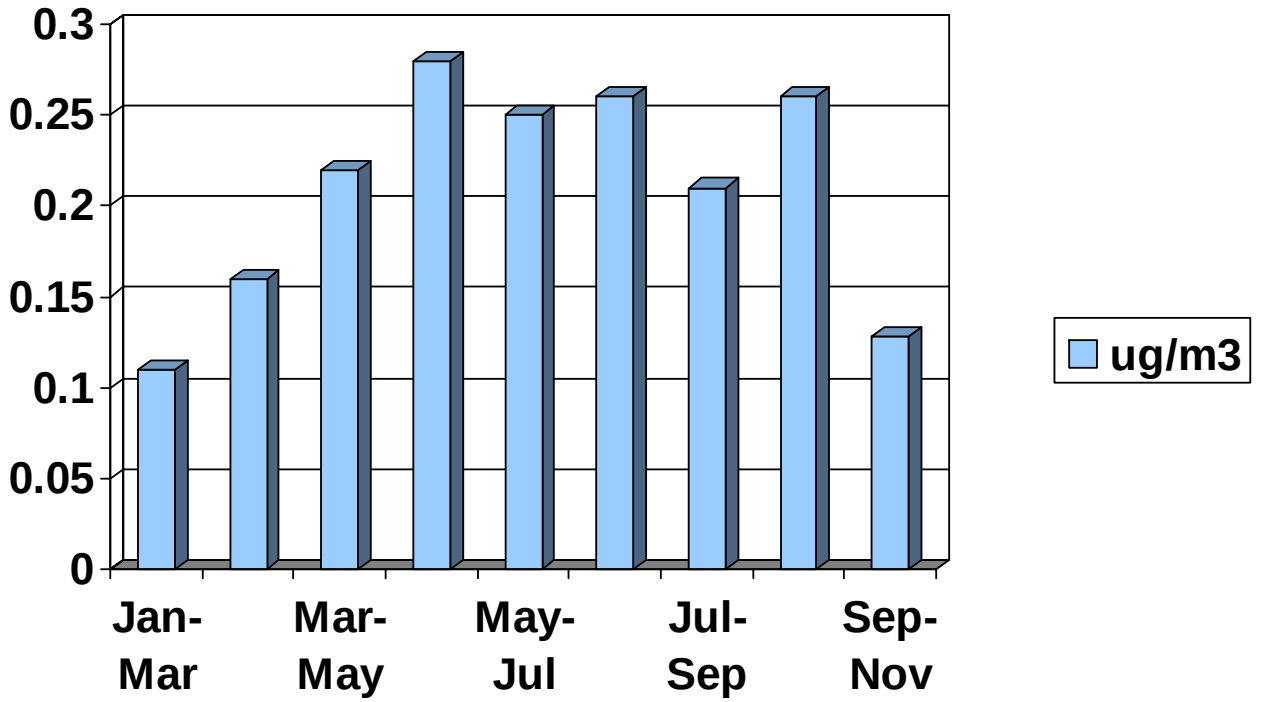
- New U.S. Environmental Protection Agency regulations for lead (Nov. 2008)
  - Lowered the National Ambient Air Quality Standard for lead by a factor of 10, from 1.5 micrograms per cubic meter ($\mu g/m^3$) to 0.15 $\mu g/m^3$
  - Required the DNRE to monitor for airborne lead near sources that both emitted more than 1 ton per year and had the potential to violate the National Ambient Air Quality Standard

DNRE's Belding Lead Monitor

DNRE Lead Air Monitoring in Belding

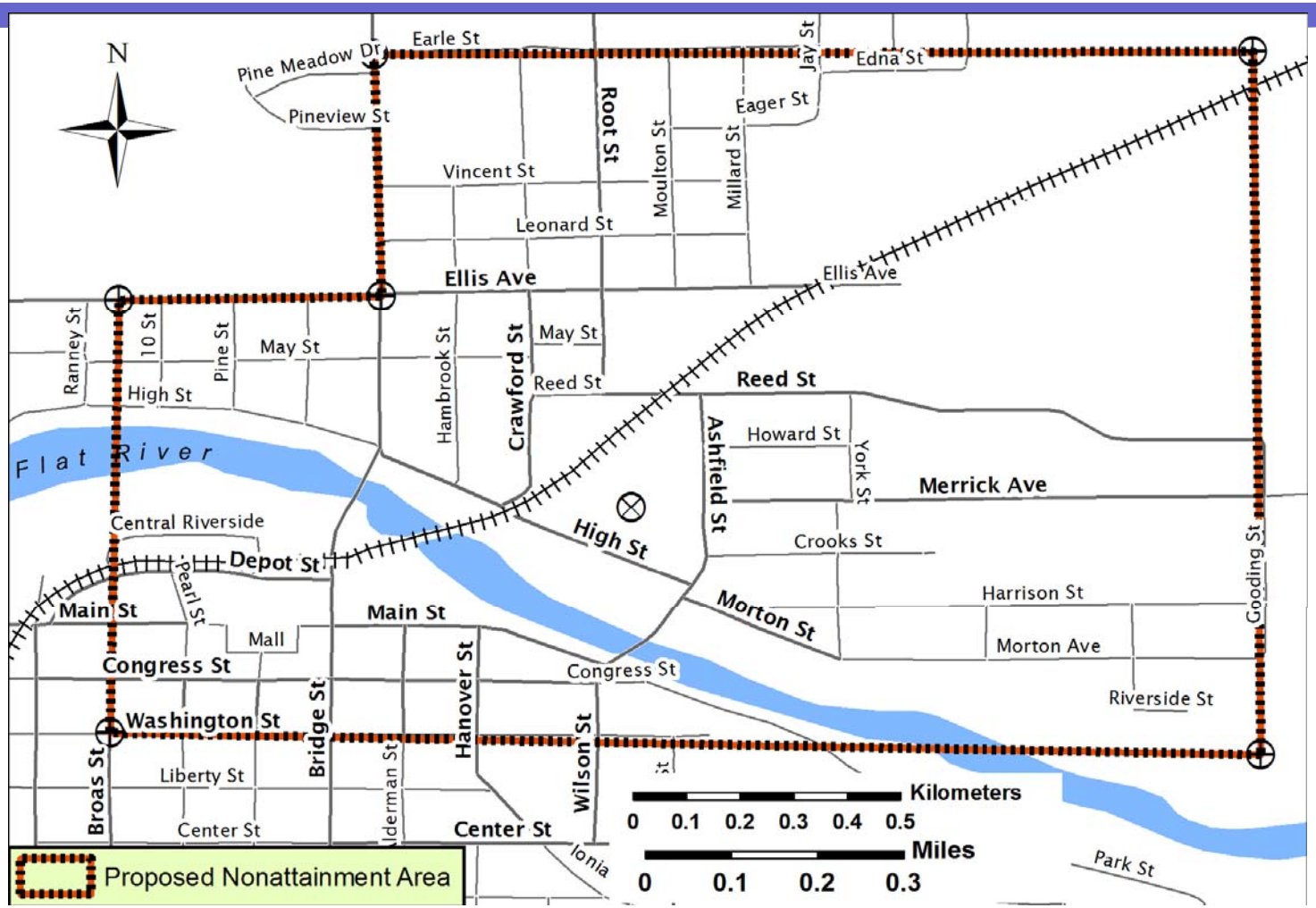
- Began in January 2010
  - Hi-volume sampler
  - Filter-based and lab analyzed
  - Samples representative of a 24-hour period
- February-April 2010: The first 3-month average to violate the National Ambient Air Quality Standard for lead (0.16 ug/m^3).
  - It takes only one 3-month average above the NAAQS in a 3-year period to be a violation

DNRE's Air Monitoring Results



Belding air-lead levels (2010 Data)

What is DNRE doing about it? Proposed Nonattainment Area…



Air Monitoring Contact

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Update: Lowering airborne lead levels in Belding

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Control of Lead Emissions

- Processes that emit lead at Mueller Industries have DNRE air use permits that restrict emissions
- Permits require control equipment to reduce pollutant emissions to the air

Sources of Lead Emissions

- East and West Chip Dryers
- Brass Melting Furnaces

Emissions Testing

- September 2009 – Mueller Industries conducted testing to evaluate emissions at the request of the DNRE
- Stack testing showed the exceedance of permitted emission limits for the West Chip Dryer
- Violation Notice issued by the DNRE to Mueller Industries for violating the permitted emission limits

Control Equipment Upgrades

- In response to the test results, Mueller started modifications to the control equipment to decrease emissions
- The installation of an enhanced scrubber system was completed on the West Chip Dryer on September 20, 2010
- Company shut down the East Chip Dryer

Emissions Testing

- Emissions testing was conducted on the West Chip Dryer on October 1, 2010
- Test results showed that the dryer is in compliance with the lead emission limits contained in the current air use permit

Emissions Testing

- Emissions testing was conducted on the East and West Baghouses which control emissions from the Brass Melting Furnaces on November 4-5, 2010

- Test results showed that the Brass Melting Furnaces are in compliance with the lead emission limits contained in the current air use permits

Future Actions

- Mueller is required to submit a permit application by the end of this month, in which they must show how they are going to comply with the new protective health standard of 0.15 ug/m3 limit
- May need to install additional controls if they are not able to comply with current pollution control devices

Local Air Issues Contact

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Soil Sampling for Lead

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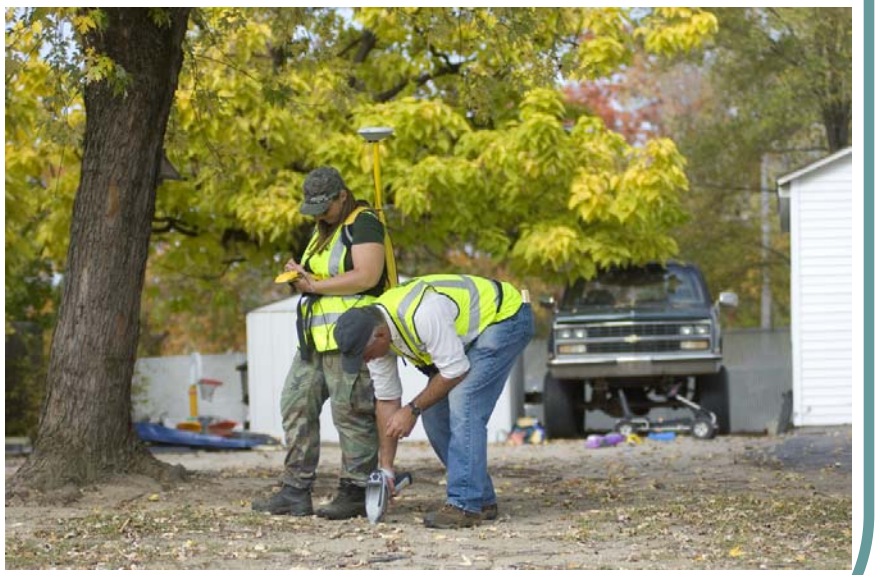
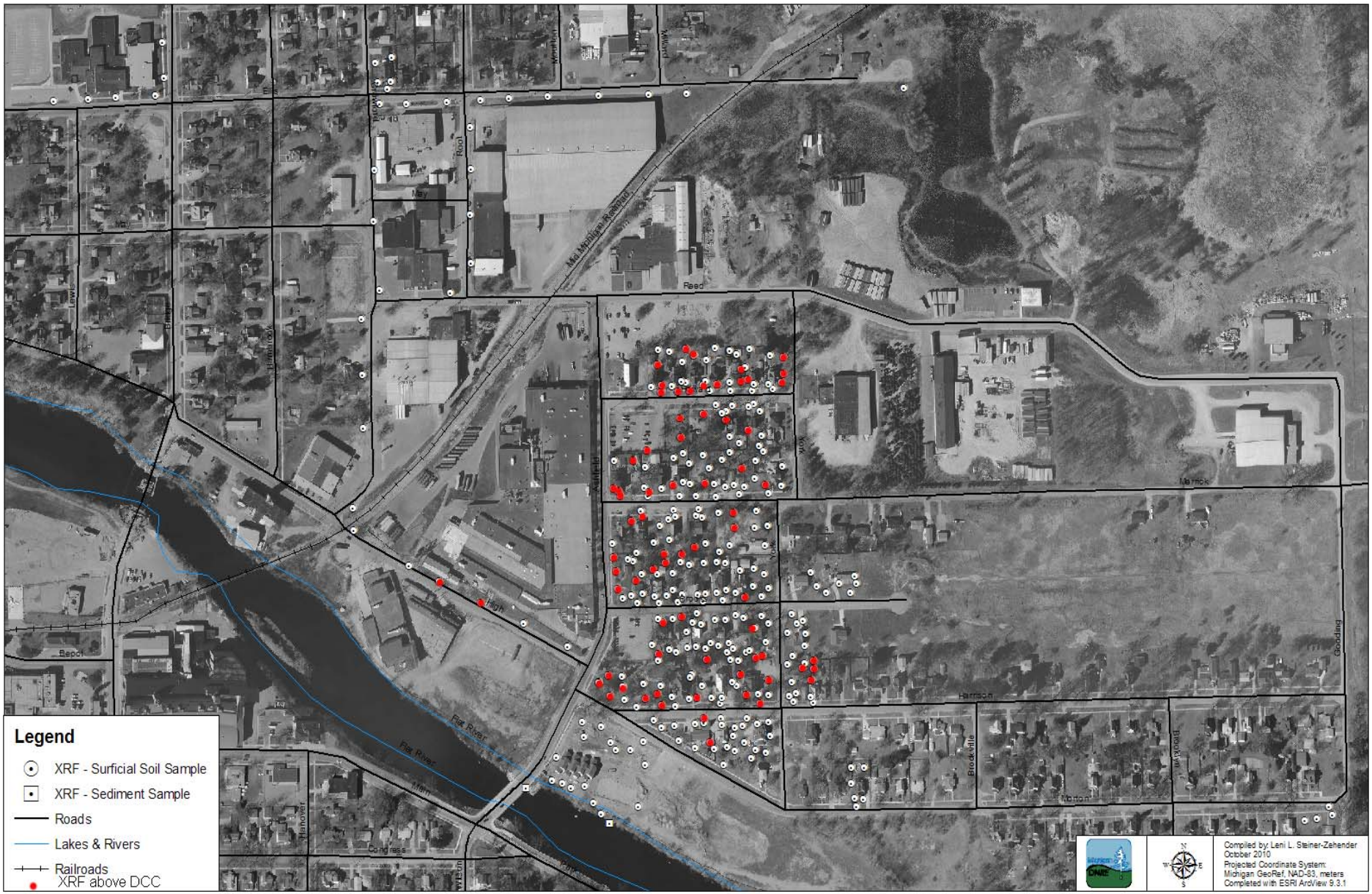
Soil Sampling

- Conducted by DNRE on October 11-13, 2011
- XRF Screening conducted on 375 soil locations
- Lab soil samples collected from 10 XRF locations



Mueller Brass
XRF Sample Locations



Mueller Brass
XRF Sample Locations

Results of Soil Sampling

Belding Metal Analysis
Mueller Industries, Belding Michigan
all results in mg/kg (ppm)

Sample Locatation	XRF Location	Lead (XRF)	Lead (Lab)	Lead Fine Fraction	Lead Coarse Fraction	Arsenic	Barium	Cadmium	Chromium	Copper	Mercury	Iron	Selenium	Silver	Zinc
State Default Background			21	21	21	5.8	75	1.2	18	32	0.13	12000	0.41	1	47
Direct Contact Criteria			400	400	400	7.6	37000	550	2500	20000	160	160000	2600	2500	170000
Drinking Water Protect.			700	700	700	4.6	1300	6	30	5800	1.7	6	4	4.5	2400
516 Merrick	XRF 261	**1070.5**	**930**	**930**	**990**	2.7	140	5.3	9.8	9600	<0.05	6700	0.67	0.68	6200
516 Merrick 6" Deep)	--	--	120	160	130	1.4	26	1.2	4.9	2000	<0.05	4100	<0.2	0.19	1300
514 Howard	XRF 265	**643.75**	**450**	**780**	**810**	3.4	180	2.7	20	5300	<0.05	7100	0.63	0.51	2100
526 Howard	XRF 270	**1099.92**	**890**	**920**	**1400**	5.5	220	4.3	19	9200	0.16	7800	1.3	1	4000
163 York	XRF 47	390.35	400	**530**	270	2.9	69	1.7	9.3	7300	<0.05	5500	0.8	0.43	2200
545 Crooks	XRF 136	**1034.8**	**780**	**760**	**2400**	3.8	83	2.3	15	3000	<0.05	5800	0.75	0.27	1600
550 Merrick	XRF 36	**853.07**	220	260	240	3.6	82	0.95	9.4	1100	<0.05	11000	0.29	0.11	840
Mueller- Stairs (High Street)	XRF 357	**3011.95**	**2200**	**2100**	**1500**	3.5	29	7.5	14	**53000**	<0.05	5100	0.65	4.1	25000
514 Crooks	XRF95	**1004.45**	390	**940**	**650**	2.7	97	2.3	12	6800	<0.05	5600	0.54	0.43	2200
304 Ellis	XRF 328	10.4	57	110	33	1.4	23	0.36	13	420	<0.05	6400	<0.2	<0.1	390
Ellis School	XRF 368	19.01	24	44	9.7	1.4	19	<0.2	8.7	370	<0.05	5800	<0.2	<0.1	220
Ellis School (6"-Deep)	--	--	14	38	12	1.1	34	<0.2	5.4	68	<0.05	5400	<0.2	<0.1	55

BOLDED - Values represent values that exceed the Residential/Commercial Direct Contact Criteria
Underlined - Values represent values that exceed the Residential/Commercial Drinking Water Protection Criteria

Discussion of Results/Response

- Lead - 7 of the 12 soil samples exceed 400 mg/kg (parts per million)
- Shared results with residents, City Officials, Local and State Health Depts. and Mueller Industries
- Committed to working with Mueller to see this issue is addressed in the short and long term.

Soil Sampling Contacts

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Toxicology of Lead in Soil

Eric Wildfang, DNRE Remediation Division
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General lead information

- Naturally occurring metal typically found at low levels in all parts of our environment (air, water, and soil).
- Commonly found in soils near roadways, older houses (paint), old orchards, mining areas, industrial and manufacturing sites, power plants and incinerators.
- Household dust can also contain lead.

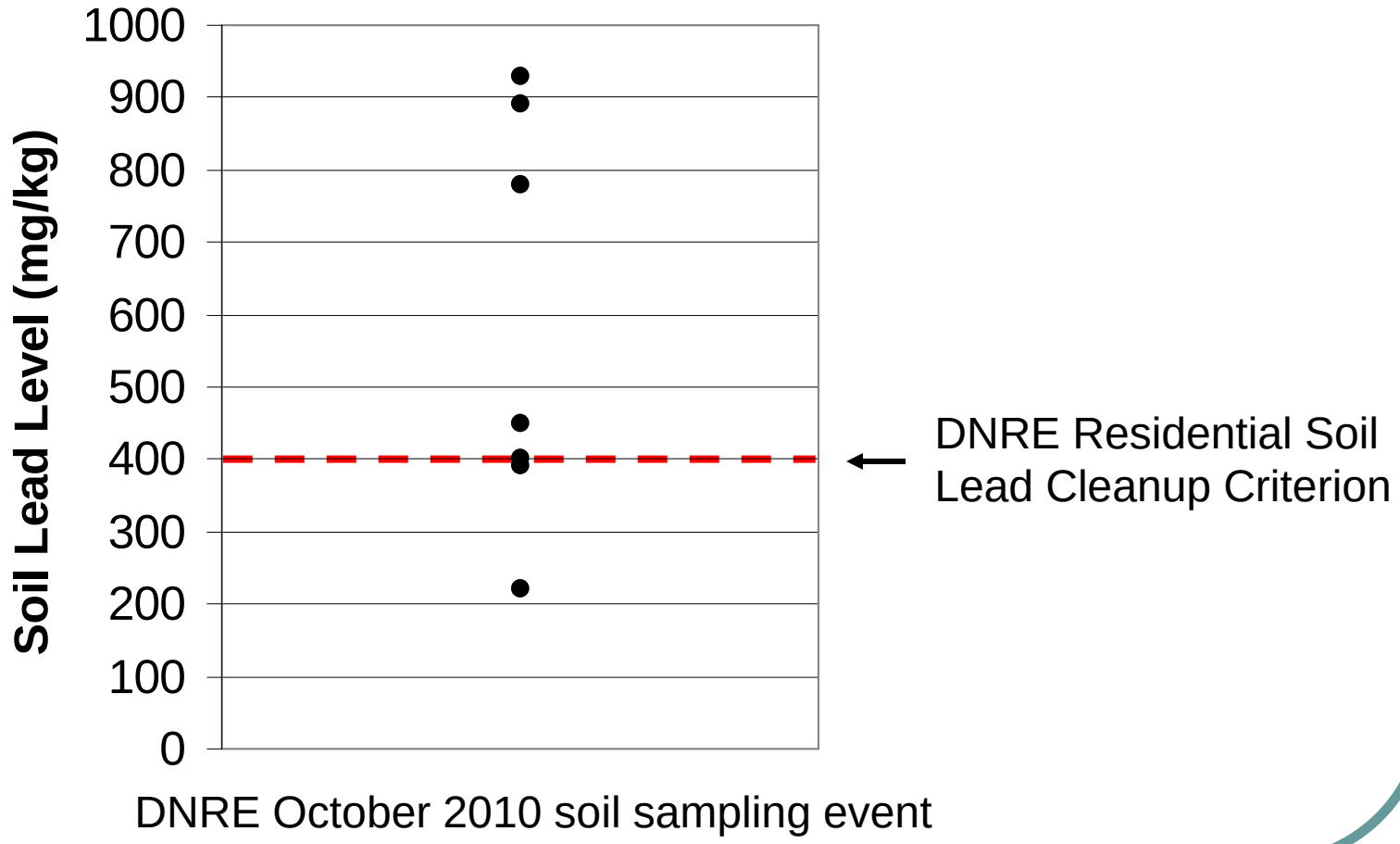
Health concerns for lead

- The main target for lead toxicity in children and adults is the nervous system.
- Long-term exposure to lead in adults can cause weakness in the fingers, wrists or ankles, increase blood pressure, or anemia.
- Short-term, high-level exposure to lead in adults and children can cause brain and kidney damage.

Health concerns for lead

- Infants and young children are more vulnerable to lead exposure than adults.
- Lead exposure can affect a child's mental and physical growth.
- U.S. EPA considers 1-2 I.Q. point loss significant
- U.S. Centers for Disease Control and Prevention (CDC) considers a blood lead level above 10 µg/dL to be a level of concern for children.
- High-level lead exposure can cause anemia, severe stomach ache, muscle weakness and brain damage in children.

Belding residential soil lead levels



What is the DNRE soil cleanup criterion?

- The DNRE soil cleanup criterion identifies the concentration of a hazardous substance (e.g., lead) in soil that is protective against adverse health effects due to long-term dermal contact with and ingestion of the contaminated soils.
- DNRE residential soil lead cleanup criterion = 400 mg/kg

What risk does 400 mg/kg represent?

- The U.S. EPA developed a computer model that estimates blood lead levels in children based on their environmental exposures (air, soil & dust, drinking water, and diet).
- The model can also be used in reverse to back-calculate an acceptable soil level from a target blood lead level (i.e., 10 µg/dL).
- Based on the model estimates, there is a low risk that children aged 1-6 years old will have blood lead levels above 10 µg/dL if exposed to soil lead concentrations of 400 mg/kg or less on a daily basis.

Reducing lead exposure risk

- RISK = HAZARD × EXPOSURE
- Reduce the HAZARD
  - Collect more soil lead data
- Reduce the EXPOSURE
  - Reduce contact with lead-contaminated soils
  - See exposure reduction measures in the “Belding Soil Lead Sampling Fact Sheet”
- Evaluate EXPOSURE
  - Blood lead level testing

Soil Toxicology Contact

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Blood Lead Levels in Belding

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Belding, Michigan

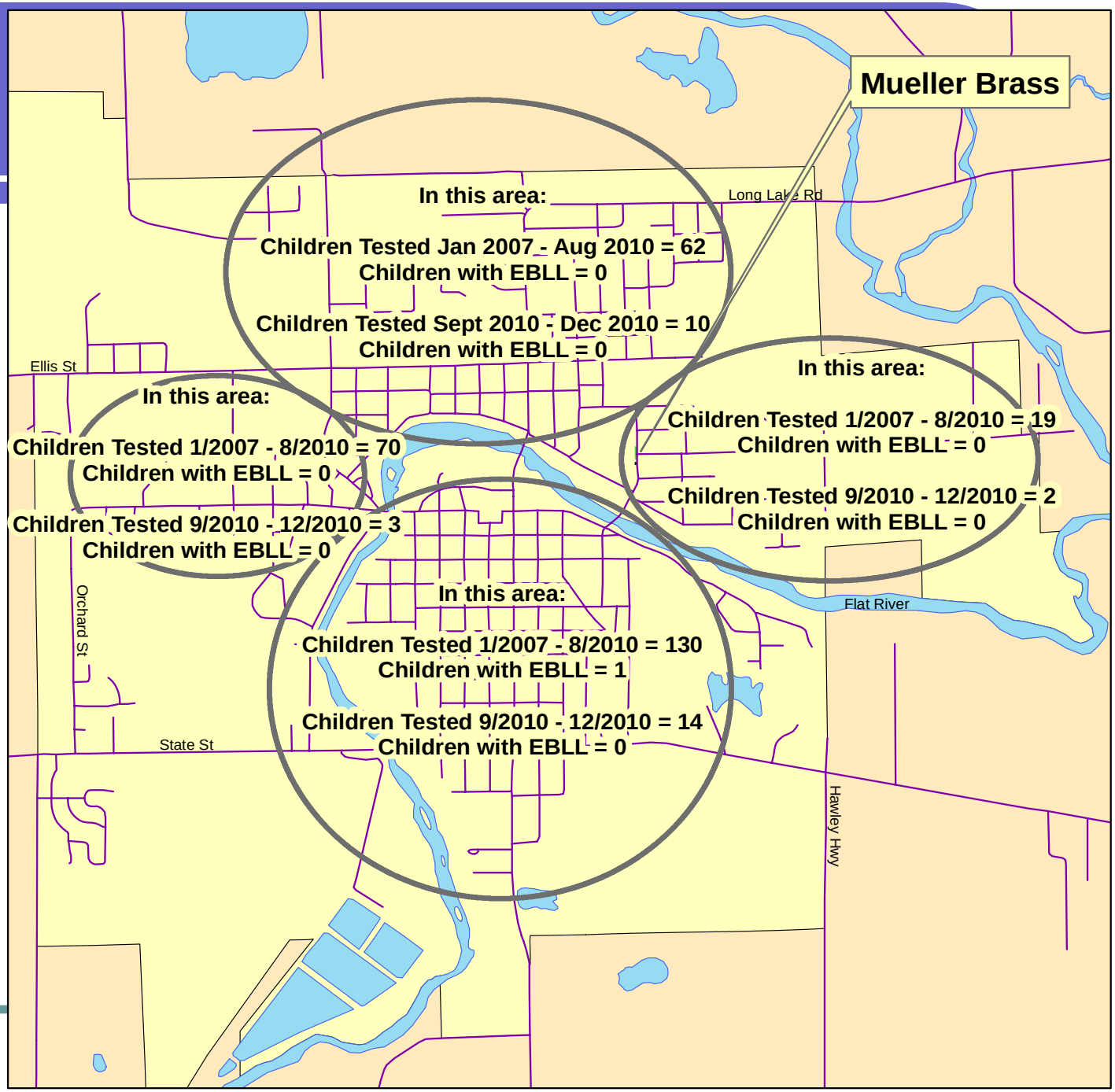
Children
< 6 years
of age

Tested for
Lead Poisoning
from 2007
through August 2010

and

September 2010
through
December 2010

"EBLL" =
elevated blood lead levels
i.e., 10 micrograms/deciliter
or higher



January 11, 2010
Source: MDCH Data Warehouse

Children Tested for Lead Poisoning

January 2007 through August 2010		September 2010 through December 2010	
City of Belding		City of Belding	
Children Tested	294	Children Tested	29
Children w/EBLL	1 (0.3 %)	Children w/EBLL	0
ZIP Code 48809		ZIP Code 48809	
Children Tested	571	Children Tested	54
Children w/EBLL	2 (0.4 %)	Children w/EBLL	0
Ionia County		Ionia County	
Children Tested	2,478	Children Tested	247
Children w/EBLL	19 (0.7%)	Children w/EBLL	1 (0.4%)
State of Michigan		State of Michigan	
Children Tested	436,234	Children Tested	48,973
Children w/EBLL	4,753 (1.1%)	Children w/EBLL	566 (1.2%)

("EBLL" = elevated blood lead levels -- i.e., 10 micrograms/deciliter or higher)

January 11, 2010 Source: MDCH Data Warehouse

Adults Tested for Lead Poisoning

January 2008 through August 2010	September 2010 through December 2010
City of Belding Tested = 50 BLLs ≥ 25 ug/dL* = 2	City of Belding Tested = 9 BLLs ≥ 25 ug/dL* = 1
Ionia County Tested = 183 BLLs ≥ 25 ug/dL* = 3	Ionia County Tested = 23 BLLs ≥ 25 ug/dL* = 1
State of Michigan Tested = 32,236 BLLs ≥ 25 ug/dL* = 231	State of Michigan Tested = 4,067 BLLs ≥ 25 ug/dL* = 38

*Triggers MIOSHA Inspection

January 11, 2011

Source: Michigan Adult Blood Lead Epidemiology and Surveillance database

Blood Lead Contacts

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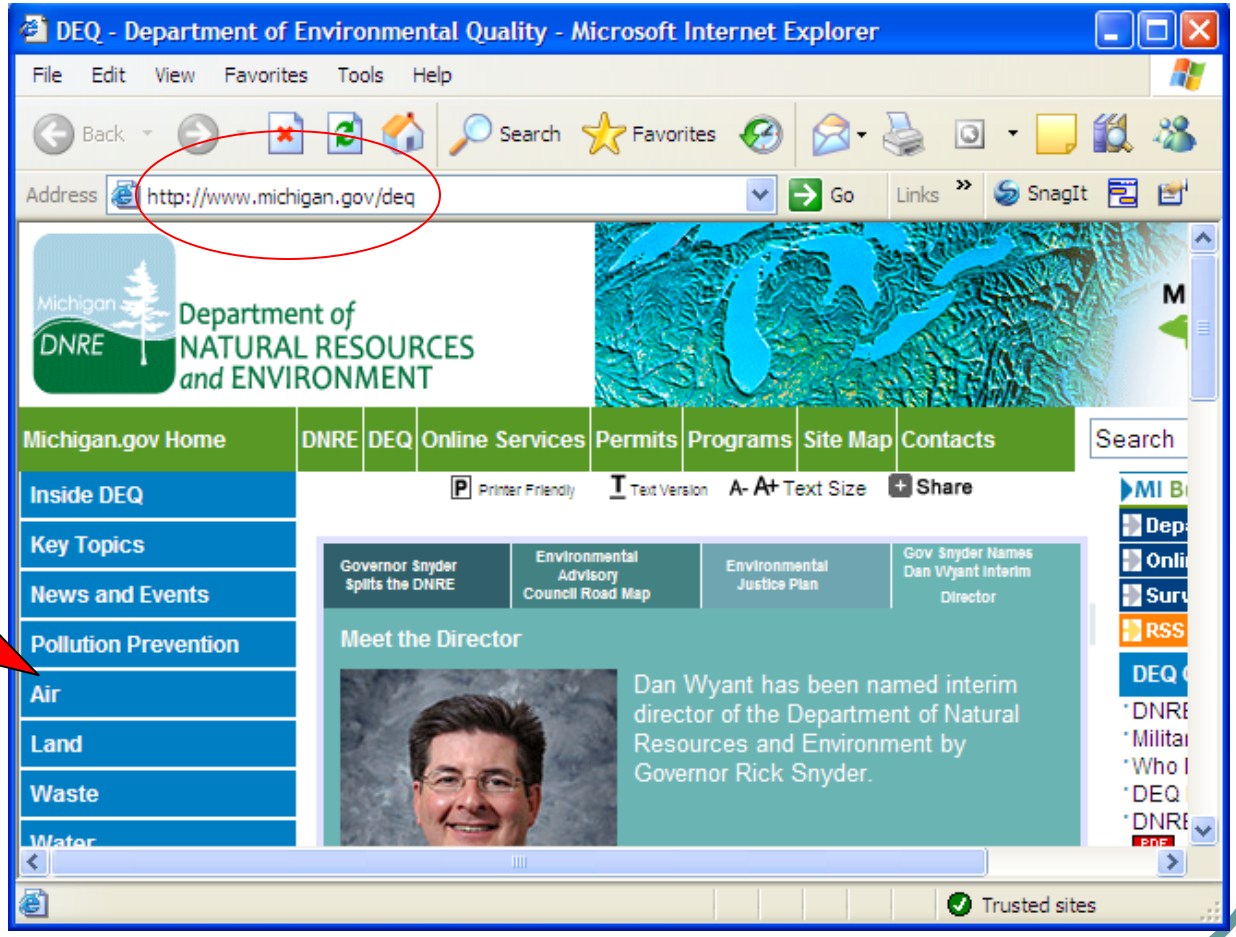
http://www.Michigan.gov/deq

Click on "Air"



“Spotlight”…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MICHIGAN'S AIR
Our clean air efforts make our state a healthier place to live!
Protecting Michigan's Air
The DEQ ensures that Michigan's air remains clean by regulating sources of air pollutants to minimize adverse impact on human health and the environment. Goals are to meet and maintain air quality standards, limit emissions of hazardous and toxic pollutants, and inform the public about current air conditions.
Announcements
• Permit and Consent Order Public Notice Documents
• Current Air Quality Planning Activities
• Customized Workshops for Permit Applicants
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• AQD District Map
• Air Publications
• Attainment Status Map 2010
• CAIR Materials
• Clean Diesel Initiative in Michigan
• Coal Fired Power Plant Information
• EPA's Greenhouse Gas Reporting Rule
• Environmental Education
• Lead (Pb) Monitoring in Belding, Michigan
• Mercury Air Iss
• Open Burning In
• Woodburning & A
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Lead (Pb) Monitoring in Belding..

- Coal Fired Power Plant Information PDF
- EPA's Greenhouse Gas Reporting Rule
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- Mercury Air Issues
- Open Burning Information
- Woodburning & Air Quality

- Air Permits System
- Michigan Air Emissions System (MAERS) Point Emissions Inventory Q
- Air Toxics Screening L